

<b>Examiner-Initiated Interview Summary</b>	Application No.	Applicant(s)	
	09/161,680	BORNSCHEUER ET AL.	
	Examiner	Art Unit	
	David J. Steadman	1656	

**All Participants:**

Status of Application: Pending-rejected

(1) David J. Steadman.

(3) \_\_\_\_\_

(2) Jason W. Bryan.

(4) \_\_\_\_\_

Date of Interview: 5 February 2007

Time: \_\_\_\_\_

**Type of Interview:**

- ☒ Telephonic  
☐ Video Conference  
☐ Personal (Copy given to: ☐ Applicant ☐ Applicant's representative)

Exhibit Shown or Demonstrated: ☐ Yes ☒ No

If Yes, provide a brief description:

**Part I.**

Rejection(s) discussed:

Claims discussed:

Prior art documents discussed:

**Part II.**

**SUBSTANCE OF INTERVIEW DESCRIBING THE GENERAL NATURE OF WHAT WAS DISCUSSED:**

*The examiner noted that three (3) pages of the response filed on 9/25/06 were compressed into a single page and requested a FAX of these pages for entry into the application file.*

**Part III.**

- ☐ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview directly resulted in the allowance of the application. The examiner will provide a written summary of the substance of the interview in the Notice of Allowability.  
☒ It is not necessary for applicant to provide a separate record of the substance of the interview, since the interview did not result in resolution of all issues. A brief summary by the examiner appears in Part II above.

  
(Examiner/SPE Signature)

\_\_\_\_\_  
(Applicant/Applicant's Representative Signature – if appropriate)

Under the provisions of the Patent Act of 1952, as amended, no fee is required to request a PTO Extension of Time under 37 CFR 1.130(e) if the fee is paid within the time period specified in the notice of the extension of time.

**PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.130(e)**

Application Number: **09/161,680** Fee: **September 28, 1998**

For: **THE GENERATION OF NEW CATALYTIC ACTIVITIES IN ENZYMES**

An Unit: **1656** Examiner: **Steadman, David**

This is a request under the provisions of 37 CFR 1.130(e) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

Time Period	Fee	Small Entity Fee
<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$500	\$125.00
<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$1000	\$250.00
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1500	\$375.00
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$2000	\$500.00
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$2500	\$625.00

Additional claims shall enter status. See 37 CFR 1.127.

A check in the amount of the fee is enclosed.

Payment by credit card. Form PTO-5030 is attached.

The Director has already been authorized to charge fees in this application to a Deposit Account.

The Director is hereby authorized to charge any fee which may be required, or credit any overpayment, to Deposit Account Number **337507**. I have enclosed a duplicate copy of this check.

WARNING: Information on this form may become public. Check case information should not be included on this form, unless it is necessary to understand the information and authorization on PTO-5030.

I am the:

- ☐ applicant/inventor
- ☐ assignee of record of the entire interest. See 37 CFR 3.71
- ☒ attorney or agent of record. Registration Number **61,508**
- ☐ attorney or agent under 37 CFR 1.34

Signature: **Jason W. Bryan** Date: **9/28/98** Title: **REG**

Printed or Typed Name: **Jason W. Bryan** Telephone Number: **202-660-0110**

Address: **1000 Louisiana Ave, 25th floor, Dallas, TX 75202, Tel: 214-257-1300, Tel: 713-436-1836**

RECEIVED  
CENTRAL FAX CENTER  
SEP 25 2006

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION      ATTORNEY DKT NO.: 48429

OF: BORNSCHIEDER RT AT.      CONFIRMATION NO.: 7941

SERIAL NO. 09/161,680      GROUP ART UNIT: 1656

FILED: SEPTEMBER 28, 1998      EXAMINER: STEADMAN, DAVID J

TITLE: **ALTERATION OF SUBSTRATE SPECIFICITY OF ENZYMES**

**REPLY TO NOTICE NON-COMPLIANT AMENDMENT**

Sir,

In response to the notice of non-compliant amendment, Applicants submit the marked version of the substrate specification. Applicants respectfully note that only the corrected section of the non-compliant amendment need be submitted in compliance with 37 CFR 1.121. Applicants also submit with this reply Davis and Waldmann, *Enzyme Catalysis in Organic Synthesis*, Wiley-VCH Verlag GmbH, Weinheim version 1995 and 2002 as requested by the Examiner.

**REQUEST FOR EXTENSION OF TIME**

It is respectfully requested that a one month extension of time be granted in this case and charged to deposit Account No. 14,147. Please charge any shortage in fees to the same account and please credit any excess fees to such deposit account.

Respectfully submitted,  
**NOVAK ORUCE & O'NEIL, LLP**  
Jason W. Bryan  
Reg. No. 31,508

1000 Louisiana Ave  
25th floor  
Dallas, TX 75202  
Tel: 214-257-1300  
Tel: 713-436-1836

BORNSCHIEDER et al.  
M.N. 09/161,680  
040928

**AMENDMENTS TO THE SPECIFICATION (marked version)**

The generation of new catalytic activities in enzymes alteration of the substrate specificity of enzymes

The invention relates to a method for generating new catalytic activities altering the substrate specificity of enzymes.

The synthetic chemist is frequently confronted by the problem in practice that he is unable to follow synthetic routes which are easy and simple to carry out to prepare a chemical compound because these routes would result in compounds in which, for example, the elimination of a required protective group is no longer possible because, otherwise, the synthesized molecule would be destroyed. To solve this problem he frequently has to follow a more complicated and time-consuming synthetic route.

Enzymes cleave chemical bonds under mild conditions. They can therefore sometimes be used to solve synthetic problems of this type, i.e. a protective group can, for example, be eliminated enzymatically under mild conditions without destroying other bonds and thus the molecule. Enzymes thus make it possible to obtain the required substances easily and quickly in the laboratory. Moreover, the enzymatic activity and/or stability is often inadequate for industrial use of the enzymes, so that although the chemical syntheses require a larger number of synthetic stages, nevertheless they are less costly and are therefore implemented industrially.

This is why a large number of studies have been carried out on improving the enzymatic activity and/or stability. Various routes have been followed for this.

It is possible by site directed mutagenesis to achieve very specific improvements in the stability and/or enzymatic activity of enzymes. The disadvantages of site directed mutagenesis of enzymes is that this method requires the availability of a large amount of knowledge about the structure and function of the enzymes from X-ray structural analyses, from modeling, and from comparisons with other enzymes of the same or similar specificity. In addition, the sequence of

09/27/2006 EFLORES 00000122 141437 09161680

01 FC:1251 120.00 DA

BEST AVAILABLE COPY

COPY OF DOCUMENT FILED ON 9/25/2006

PTO/SB/22 (07-08)

Approved for use through 09/30/2006. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a)</b>		Docket Number (Optional)	
FY 2005 (Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).)		48429	
Application Number 09/161,680		Filed September 28, 1998	
For <b>THE GENERATION OF NEW CATALYTIC ACTIVITIES IN ENZYMES</b>			
Art Unit 1656		Examiner Steadman, David	

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

	Fee	Small Entity Fee	
<input checked="" type="checkbox"/> One month (37 CFR 1.17(a)(1))	\$120	\$60	\$ 120.00
<input type="checkbox"/> Two months (37 CFR 1.17(a)(2))	\$450	\$225	\$ 450.00
<input type="checkbox"/> Three months (37 CFR 1.17(a)(3))	\$1020	\$510	\$ 1020.00
<input type="checkbox"/> Four months (37 CFR 1.17(a)(4))	\$1590	\$795	\$ 1590.00
<input type="checkbox"/> Five months (37 CFR 1.17(a)(5))	\$2160	\$1080	\$ 2160.00

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 14.1437 I have enclosed a duplicate copy of this sheet.

**WARNING:** Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

I am the ☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71.  
Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).

☒ attorney or agent of record. Registration Number 51,505

☐ attorney or agent under 37 CFR 1.34.  
Registration number if acting under 37 CFR 1.34 \_\_\_\_\_

Jason W. Bryan Signature 9/25/06 Date

Jason W. Bryan Typed or printed name 202-659-0100 Telephone Number

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ Total of \_\_\_\_\_ forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 8 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1480, Alexandria, VA 22313-1480.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

COPY OF DOCUMENT FILED ON 9/25/2006

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION

ATTORNEY DKT NO: 48429

OF: BORNSCHEUER ET AL.

CONFIRMATION NO.: 7944

SERIAL No. 09/161,680

GROUP ART UNIT: 1656

FILED: SEPTEMBER 28, 1998

EXAMINER: STEADMAN, DAVID J

TITLE: THE ALTERATION OF SUBSTRATE SPECIFICITY OF  
ENZYMESREPLY TO NOTICE NON-COMPLIANT AMENDMENT


Sir,

In response to the notice of non-compliant amendment, Applicants submit the marked version of the substitute specification. Applicants respectfully note that only the corrected section of the non-compliant amendment need be submitted in compliance with 37 CFR 1.121. Applicants also submit with this reply Drauz and Waldmann, *Enzyme Catalysis in Organic Synthesis*, Wiley-VCH Verlag GmbH, Weinheim versions 1995 and 2002 as requested by the Examiner.

REQUEST FOR EXTENSION OF TIME:

It is respectfully requested that a one month extension of time be granted in this case and charged to deposit Account No. 14.1437. Please charge any shortage in fees to the same account and please credit any excess fees to such deposit account.

Respectfully submitted,  
NOVAK DRUCE & QUIGG, LLP

  
Jason W. Bryan  
Reg. No. 51,505

1000 Louisiana Ave  
53<sup>rd</sup> floor  
Houston, Texas 77002  
T: 713-571-3400  
F: 713-456-2836

COPY OF DOCUMENT FILED ON 9/25/08

BORNSHEUER et al.  
S.N. 09/161,680  
060925

AMENDMENTS TO THE SPECIFICATION (marked version)

The ~~generation of new catalytic activities in enzymes~~ alteration of the substrate specificity of enzymes

The invention relates to a method for ~~generating new catalytic activities~~ altering the substrate specificity of enzymes.

The synthetic chemist is frequently confronted by the problem in practice that he is unable to follow synthetic routes which are easy and simple to carry out to prepare a chemical compound because these routes would result in compounds in which, for example, the elimination of a required protective group is no longer possible because, otherwise, the synthesized molecule would be destroyed. To solve this problem he frequently has to follow a more complicated and time-consuming synthetic route.

Enzymes cleave chemical bonds under mild conditions. They can therefore sometimes be used to solve synthetic problems of this type, ie. a protective group can, for example, be eliminated enzymatically under mild conditions without destroying other bonds and thus the molecule. Enzymes thus make it possible to obtain the required substances easily and quickly in the laboratory. However, the enzymatic activity and/or stability is often inadequate for industrial use of the enzymes, so that although the chemical syntheses require a larger number of synthesis stages, nevertheless they are less costly and are therefore implemented industrially.

This is why a large number of studies have been carried out on improving the enzymatic activity and/or stability. Various routes have been followed for this.

It is possible by site directed mutagenesis to achieve very specific improvements in the stability and/or enzymatic activity of enzymes. The disadvantage of site directed mutagenesis of enzymes is that this method requires the availability of a large amount of knowledge about the structure and function of the enzymes from X-ray structural analyses, from modeling, and from comparisons with other enzymes of the same or similar specificity. In addition, the sequence of